**भारतीय मानक** **IS 2058 : 2023**

***Indian Standard***

# वस्त्रादि — पर्न चेंजिंग स्वचालित कपास करघों के लिए शटल — विशिष्टि

*( दूसरा पुनरीक्षण )*

# Textiles — Shuttles for Pirn-Changing Automatic Cotton Looms — Specification

*( Second Revision )*

ICS 59.120.30

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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

**June 2023** **Price Group 5**

Textile Machinery and Accessories Sectional Committee, TXD 14

## FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Machinery and Accessories Sectional Committee had been approved by the Textiles Division Council.

Shuttles are thrown or passed back and forth through the shed, between the yarn threads of the warp in order to weave in the weft.

This standard has been formulated to provide guidance to the manufacturers of shuttles for use in pirn changing automatic cotton looms. This standard would ensure the manufacture of shuttles of acceptable quality.

This standard was originally published in 1962 and subsequently revised in 1973. This revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

a) Title of the standard has been modified;
b) Marking clause has been modified;
c) Packing and sampling clauses have been incorporated; and
d) References to Indian standards have been updated.

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard

*Indian Standard*

# TEXTILES — SHUTTLES FOR PIRN-CHANGING AUTOMATIC COTTON LOOMS — SPECIFICATION

*( Second Revision )*

## 1 SCOPE

This standard specifies the dimensional details and other requirements for shuttles for pirn-changing automatic cotton looms.

## 2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in Annex A.

## 3 TERMINOLOGY

**3.l Left Hand Shuttle** — The eye of the shuttle falls on the right-hand side when viewed from the Weaver's position in front of the loom.

**3.2 Right-Hand Shuttle** — The eye of the shuttle falls on the left-hand side when viewed from the Weaver's position in front of the loom.

## 4 MANUFACTURE

### 4.1 Material

Material used for shuttles shall be as according to shuttle blocks conforming to IS 9287.

### 4.2 Shape and Dimensions

The shape and dimensions of the shuttle shall be as shown in Fig. 1 and as specified in Table 1.

### 4.3 Weight

The weight of the shuttle shall be as agreed to between the buyer and the seller subject to a tolerance of ± 5 percent.

### 4.4 Shuttle Accessories

Various accessories used in making shuttle shall be conform to IS 10795.

### 4.5 Workmanship and Finish

**4.5.1** The timber for the manufacture of the shuttle shall be fully seasoned (*see* IS 1141).

**4.5.2** The shuttle shall be free from knots, cracks and any other visible defect which is likely to affect its life or usefulness.

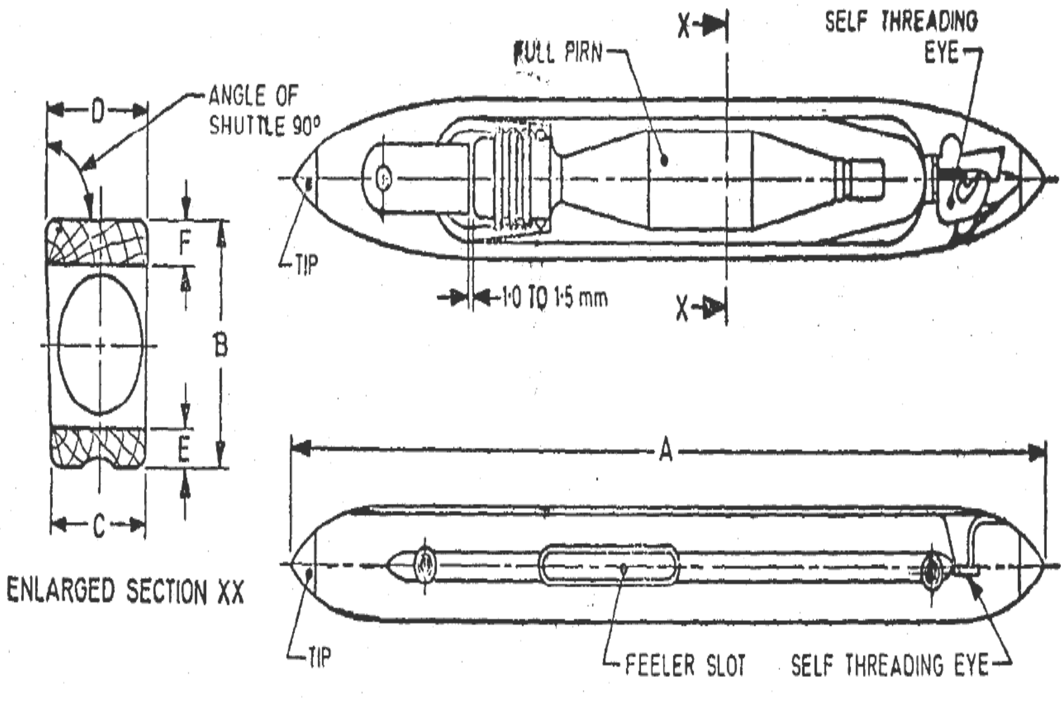

FIG. 1 SHAPE AND DIMENSIONS OF SHUTTLE

**4.5.3** The outer surface and the surfaces where the yarn comes into contact shall be finished smooth

**4.5.4** The angle of shuttle (bevel) shall normally be 90º.

**4.5.5** If agreed to between the buyer and the seller, the shuttles made of uncompressed wood shall be pressure-impregnated with raw linseed oil.

**4.5.6** If prescribed by the buyer, a fibre washer shall be provided under the tip.

## 5 REQUIREMENTS

### 5.1 Positioning of Accessories

When the pirn is seated in the shuttle, the centre of pirn shall be in line with the centre of the threading eye.

### 5.2 Dropping Test

Drop the shuttle vertically, with one of its tips facing downwards, from a height of one metre on a cast iron plate and the tip shall not get blunt.

**Table 1 Dimensions for Shuttles for Pirn-changing Automatic Cotton Looms**
(*Clause* 4.2)

All dimensions in millimetres.

| **Sl No.** | **Variety No. (*see* Note 1)** | **Overall length** | **Width at Bottom** | **Height** | | **Thickness** | | **Remarks** |
|---|---|---|---|---|---|---|---|---|
| | | | | Front | Back | Front | Back | |
| | | A | B | C | D | E | F | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| i) | 1 | 405 | 48.0 | 34.5 | 36.0 | 8.0 | 9.0 | - |
| ii) | 2 | 425 | 50.0 | 31.5 | 35.0 | 8.0 | 9.0 | for pirn of 30 mm dia |
| iii) | 3 | 425 | 50.0 | 29.0 | 32.0 | 8.0 | 9.0 | for pirn of 27 mm dia |
| iv) | 4 | 405 | 49.0 | 35.0 | 36.5 | 7.0 | 7.0 | - |
| v) | 5 | 425 | 50.0 | 31.5 | 35.0 | 8.0 | 9.0 | - |
| vi) | 6 | 430 | 51.0 | 33.5 | 35.0 | 9.0 | 8.5 | - |
| vii) | 7 | 420 | 48.0 | 33.5 | 35.0 | 6.3 | 6.3 | - |
| viii) | 8 | 400 | 48.0 | 33.5 | 35.0 | 6.3 | 6.3 | - |
| ix) | 9 | 400 | 44.5 | 31.5 | 33.5 | 7.0 | 7.0 | - |
| x) | 10 | 390 | 45.0 | 32.0 | 34.0 | 7.0 | 6.0 | - |
| Tolerance | - | ± 1 | ± 0.5 | ± 0.5 | ± 0.5 | ± 0.5 | ± 0.5 | - |

NOTES

**1** Varieties 1, 2 and 3 of the shuttles are normally used for NMM-Ruti looms, Varieties 4 and 5, for Northrop, Variety 6 for Picanol, Varieties 7, 8 and 9 for Cooper-Draper and Variety 10 for Cimmco-Sakamoto looms.

**2** The free space is normally equal to the overall length of the pirn plus 21 mm to 30 mm.

**3** In case an agreement between the buyer and the seller provides for dimensions other than those specified above, they shalt be declared and shall be subject to the tolerances specified above.

**4** The distance between the tip and the jaw cover end depends on the make of the loom in conjunction with which the shuttle is to be used. However, it shall be subject to a tolerance of ± 0.5 mm.

**5** The location and size of the slots for the midget feeler and the thread cutter depend on the make of the loom in conjunction with which the shuttle is to be used.

## 6 MARKING

**6.1** Each shuttle shall be marked with the following:

a) Brand or trade-mark of the manufacturer;
b) Hand of the shuttle, whether right hand (R) or left hand (L); and
c) Code No. to trace the history of production.

**6.2** Each case/carton of shuttles shall also bear the following information:

a) Dimension of shuttles;
b) Material of shuttles;
c) Number of shuttles;
d) Gross and net mass;
e) Lot/batch number;
f) Country of origin; and
g) Any other information required by the law in force and/or by the buyer.

### 6.3 BIS Certification Marking

The shuttles conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act,* 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## 7 PACKING

The shuttles shall be packed in wooden cases. In the wooden case they shall be laid horizontally and supported on two wooden slats on either end near the collars. Each layer of shuttles shall be separated from the next layer by wooden slats.

## 8 SAMPLING

### 8.1 Lot

In any consignment, the number of shuttles delivered to a buyer against a dispatch note, shall constitute a lot.

**8.2** Unless otherwise agreed to between the buyer and the seller, the number of shuttles to be selected for inspection, shall be according to co1 (2) and col (3) of Table 1 [*see also* IS 2500 (Part 1)].

**Table 1 Sample Size and Permissible Number of Defectives**
(*Clauses* 8.2 and 8.3)

| Sl No. (1) | Lot Size (2) | Sample Size (3) | Sub- Sample Size (4) | Permissible Number of Defectives (5) |
|---|---|---|---|---|
| i) | Up to 150 | 8 | 3 | 1 |
| ii) | 151 to 280 | 13 | 3 | 1 |
| iii) | 281 to 500 | 20 | 3 | 2 |
| iv) | 501 and above | 32 | 5 | 3 |

### 8.3 Criteria for Conformity

The lot shall be considered conforming to the requirements if the following conditions are satisfied:

| *Characteristic* | *Number of Samples* | *Criteria for Conformity* |
|---|---|---|
| Shape and Dimensions | According to co1 3 of Table 1 | Number of defective shuttles shall not exceed the corresponding number given in col (5) of Table 1 |
| Material and All other requirements | According to co1 4 of Table 1 | All shuttles meet the relevant requirements |

## ANNEX A

(*Clause* 2)

## LIST OF REFERRED INDIAN STANDARDS

| *IS No.* | *Title* |
|---|---|
| IS 1141 : 1993 | Seasoning of timber — Code of practice (*second revision*) |
| IS 2500 (Part 1) : 2000 | Sampling procedures for inspection by attributes: Part 1 Sampling schemes indexed by acceptance quality limit (AQL) for lot by lot inspection (*third revision*) |
| IS 9287 : 1979 | Specification for wooden shuttle blocks for pirn-changing automatic looms |
| IS 10795 : 1984 | Specification for accessories for use in shuttles for pirn-changing automatic cotton looms |

## ANNEX B
(*Foreword*)

## COMMITTEE COMPOSITION
Textile Machinery and Accessories Sectional Committee, TXD 14

| *Organization* | *Representative(s)* |
|---|---|
| Central Manufacturing Technology Institute, Bengaluru | Dr Nagahanumaian (***Chairperson***) |
| ATE Enterprises Private Limited, New Delhi | Shri Abhijit Kulkarni<br>Shri Anil Kumar Sharma (*Alternate*) |
| Amritlakshmi Machine Works, Mumbai | Shri N. K. Brahmachari<br>Shri N. K. Raut (*Alternate*) |
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| Central Manufacturing Technology Institute, Bengaluru | Shri B. R. Mohanraj<br>Shri K. Saravanan (*Alternate*) |
| Confederation of Indian Textile Industry, New Delhi | Shri Ajay Kumar |
| Dashmesh Jacquard and Powerloom Private Limited, Panipat | Shri Rajmeet Dhammu (*Representative*) |
| HLL Lifecare Limited, Noida | Shri Akhil G. S.<br>Shri Ratnakar Gupta (*Alternate*) |
| ICAR-Central Institute for Research on Cotton Technology, Mumbai | Dr V. G. Arude<br>Dr T. Senthilkumar (*Alternate*) |
| India ITME Society, Mumbai | Shri Prashant Mangukia<br>Shrimati Seema Srivastava (*Alternate*) |
| Indian Jute Industries Research Association, Kolkata | Shrimati Saumita Choudhury<br>Shri Partha Sanyal (*Alternate*) |
| Indian Textile Accessories and Machinery Manufacturers Association, Mumbai | Shri N. D. Mhatre<br>Shri Chandresh Shah (*Alternate*) |
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| Office of the Textile Commissioner, Mumbai | Shri C. R. Kalesan<br>Shri Jagram Meena (*Alternate*) |
| Peass Industrial Engineers Private Limited, Navsari | Shri Ravi S. Rao |

| *Organization* | *Representative(s)* |
|---|---|
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| Technocraft Industries India Limited, Mumbai | Shri Ravinder Kumar<br>Shri Duradundeshwar Hiremath (*Alternate*) |
| Textile Machinery Manufacturers Association, Mumbai | Shri M. Shankar<br>Shri Prashant Mangukia (*Alternate*) |
| The Bombay Textile Research Association, Mumbai | Shri Vijay Gawde<br>Shri R. A. Shaikh (*Alternate*) |
| The Synthetic and Art Silk Mills Research Association, Mumbai | Dr Manisha Mathur<br>Shri Sanjaya Saini (*Alternate*) |
| The Textile Association (India), Mumbai | Shri J. B. Soma<br>Shri Ashok Juneja (*Alternate*) |
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Scientist 'B'/Assistant Director
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## Amendments Issued Since Publication

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**BUREAU OF INDIAN STANDARDS**

**Headquarters:**

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
*Telephones*: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

**Regional Offices:** *Telephones*

Central : 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002 — 2323 7617

Eastern : 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091 — 2367 0012, 2320 9474

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